How is the Nervous System Organized?

Chapter 3
Neuroscience

Class Objectives

- What is the Nervous System?
- What are the 3 divisions of the brain?
  - Hind-brain
  - Mid-brain
  - Forebrain

What is the Nervous System?

- The Nervous System is the body’s main ____________________
  ____________________
  ____________________
  ____________________
  ____________________

- This consists of structures and organs that facilitate ____________________
  ____________________
  ____________________
  ____________________
  ____________________
The Nervous System

- Central Nervous System (CNS)
- Peripheral Nervous System (PNS)

The main function of the PNS is

The spinal cord transmits signals from the sensory organs, muscles and glands to the brain.

The spinal cord is like a between the brain and the rest of the body.
Spinal cord communication

- Communicates with the body below the head through sensory and motor neurons

  (afferent neurons)
  Carry information about touch, pain, and other senses

Motor neurons (neurons)
Transmit impulses

Did you know...?

- There are about 3 million miles of axons in the human brain

  Information travels in the nerves at speeds up to 268 miles per hour!

How much do you know about YOUR brain??

Structures of the brain
What observations can you make about the brain?

The exterior covering (cortex) of the brain is wrinkled which ____________________________

The brain is divided into 2 hemispheres
- Right and left hemispheres

The hemispheres of the brain are connected
- The ____________________________ connects these hemispheres and allows ____________________________
Damage to the Corpus Callosum results in two independent brains in one skull allowed researchers to discover __________

Split Brain Research

This research showed that each hemisphere of the brain is specialized

- The right brain is associated __________________________

- The left brain is associated with ________________________
Why are they different?

• More ____________________________ have a larger proportion of the brain taken up by the cerebral cortex.

• The ____________________________ made up of four lobes, is involved in many complex brain functions including:
  - memory
  - perceptual awareness
  - “thinking”
  - language and consciousness

Does bigger mean smarter?

Three Divisions of the Brain

- Hindbrain
- Midbrain
- Forebrain
The Hindbrain

- This is the ____________________________
- The structures in the lower brain tend to be responsible for basic, ____________________________
- Includes the cerebellum, Pons, and medulla

The Hindbrain

- The Medulla is the most primitive and lowest portion of the hindbrain (Part of the brain stem).

Thalamus [sensation]
Reticular Formation [sleep/wake]
Pons: provides link ("bridge") between the medulla and the cerebellum and rest of brain.

Cerebellum: "Little brain" – attached to back surface of brain stem.

Next Class...

More on the brain!